

What's claimed is:

1. An apparatus for weighing materials online, comprising:
 - a light-emitting unit, emitting light beams irradiating on the surface of materials transported on a belt to form a bright projection which has the same shape as that of a
 - 5 upper contour of a cross-section of the material;
 - a CCD camera for continuously picking up images of the bright projection on the upper contour of the cross-section of the material;
 - an image capture unit, connected to the CCD camera for continuously capturing the images; and
 - 10 a central processing unit, connected to the image capture unit for processing the images captured by the image capture unit to compute the weight of the material.
2. The apparatus of claim 1, wherein said light-emitting unit further includes a laser and a beam-forming optics unit, wherein a beam emitted by the laser passes through the beam-forming optics unit to form a line-spot fan-shaped beam.
- 15 3. The apparatus of claim 2, wherein the width of the line-spot fan-shaped beam shall be larger than the maximum width of the material on the belt.
4. The apparatus of claim 1, further comprising a speed sensor connected to said central processing unit for determining the speed of the belt.
5. The apparatus of claim 4, wherein said speed sensor is a Hall device settled on a
- 20 conveyor shaft.
6. The apparatus of claim 1, further comprising:
 - a γ ray source under the belt for emitting γ ray which passes through the material transported the belt;
 - a γ ray detecting unit for detecting the γ ray which has passed through the material
 - 25 to obtain a γ ray signal;
 - a γ ray signal processing unit for processing said γ ray signal; and
 - wherein said central processing unit computes a bulk density of the material according to a processed γ ray signal and obtains the weight of the material.

7. The apparatus of claim 6, wherein said γ ray detecting unit includes:
a scintillating crystal for receiving said γ ray and generating a corresponding optical signal at the stimulation of the γ ray;

a photomultiplier tube for converting said optical signal to an electric signal; and a
5 preamplifier circuit for amplifying the electric signal of said photomultiplier tube and
providing an amplified electric signal to said γ ray signal processing unit.